AMERICAN ANNALS OF THE DEAF

FOUNDED 1847

Official Organ

Conference of Executives of American Schools for the Deaf
FOUNDED 1868

Convention of American Instructors of the Deaf
FOUNDED 1850

●

POWRIE V. DOCTOR
Editor

LEONARD M. ELSTAD
Associate Editor

Under the direction of

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JOHN F. GRACE, Missouri, 1953
SAM B. CRAIG, Pennsylvania, 1954
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Executive Committee of the Conference

MAY

1953

Volume 98 **Number 3**

THE CONFERENCE OF EXECUTIVES OF AMERICAN SCHOOLS FOR THE DEAF

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The Conference of Executives of American Schools for the Deaf, originally the Conference of Superintendents and Principals of American Schools for the Deaf, was founded in 1868 and subsequently incorporated under the laws of the State of Maryland in 1931. The Conference is an organization of the executive heads of schools for the deaf in the United States and Canada, and has for its object "to promote the management and operation of schools for the deaf along the broadest and most effective lines and to further and promote the general welfare of the deaf."

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The Convention of American Instructors of the Deaf, founded in 1850 and incorporated by act of Congress in 1897, is an organization of educators of the deaf in the United States and Canada with the general object of "promotion of the education of the deaf on the broadest, most advanced, and practical lines," and for that purpose "to secure the harmonious union in the organization, of all persons actually engaged in educating the deaf in America."

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Assistants

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JOHN F. GRACE, Missouri, 1953
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CLARENCE D. O'CONNOR, New York, 1955
WILLIAM J. MCCLURE, Tennessee, 1955

Executive Committee of the Conference

MAY
1953

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AMERICAN ANNALS OF THE DEAF

Vol. 98 May, 1953 No. 3

Tentative Program for the Thirty-sixth Regular Meeting of the Convention of American Instructors of the Deaf, June 28-July 3, 1953, Washington State School for the Deaf, Vancouver, Washington

The tentative program for the Thirty-sixth Regular Meeting of the Convention of American Instructors of the Deaf has been arranged. The members of the Program Committee have at all times attempted to make the program one for the teacher of the deaf. We believe that all phases of the educational program for the deaf are being represented in such a manner as will point up in every respect the theme for the Convention, "Toward a New Understanding of the Deaf Child."

Truman L. Ingle, Superintendent
Missouri School for the Deaf
Chairman, Program Committee

SUNDAY, JUNE 28, 1953
OPENING SESSION—8:00 P.M.
Dr. Daniel T. Cloud, President, Presiding

Invocation

"America"

"God Save the Queen"

Address of Welcome: Virgil W. Epperson, Superintendent, Washington State School for the Deaf, Vancouver, Washington

Address of Welcome: Governor Langlie

Response: Robert S. Brown, Superintendent, Mississippi School for the Deaf, Jackson, Mississippi

Keynote Address: "Toward a New Understanding of the Deaf Child"—Dr. Helmer Myklebust, Professor of Audiology, Northwestern University, Evanston, Illinois

President's Address: Dr. Daniel T. Cloud, Superintendent, New York School for the Deaf, White Plains, New York

Appointment of Committees

Announcements

MONDAY, JUNE 29, 1953

SPEECH

Miss Bessie Pugh, Section Leader, Florida State School for the Deaf, St. Augustine, Florida

8:45–9:05—Address: "The Necessary Framework for the Development of a Good Speech Program"

9:05–9:30—Panel Discussion: "How Should Speech Intelligibility of the Deaf Child Be Evaluated?"
"How Can Yearly Speech Growth Best Be Measured?"

9:30–10:00—Demonstration

10:00–10:10—Discussion

10:10–10:40—Demonstration

10:40–10:50—Discussion

11:05–11:45—Address: Ross Hamilton, Director of Education of the Handicapped, State of Washington

ART SECTION

Mrs. Grace Bilger, Section Leader, Kansas School for the Deaf, Olathe, Kansas, Presiding

Mrs. Esther Deer, Co-chairman, Washington State School for the Deaf, Vancouver, Washington

8:45–10:50—"Developing Creative and Aesthetic Attitudes in Art"

Open Forum

SECTION FOR DEAF TEACHERS

Thomas Ulmer, Section Leader, Oregon School for the Deaf, Salem, Oregon, Presiding

Discussants: Lloyd Ambrosen, Principal, Minnesota School for the Deaf, Boyce Williams, Office of Vocational Rehabilitation, Washington, D. C.

8:45–9:10—Paper: "Raising the Standards in Our Schools for the Deaf"—Wesley Lauritsen, Teacher, Minnesota School for the Deaf, Faribault, Minn.

9:10–9:20—Open Discussion

9:20–9:45—Paper: "Senior Problems for the Deaf"—Emil Ladner, Teacher, California School for the Deaf, Berkeley, Calif.

9:45–9:55—Open Discussion

9:55–10:20—Paper: "Developing Citizenship and Character Through Guidance in the Classrooms"—Thomas Dillon, Principal, New Mexico School for the Deaf, Santa Fe, New Mexico

10:20–10:45—Paper: "Teaching by the Group Method"—David Mudgett, Teacher, Illinois School for the Deaf, Jacksonville, Ill.

LANGUAGE

Miss Priscilla Pittenger, Chairman, Assistant Professor Special Education, San Francisco State College, San Francisco, California

1:45—"An Experimental Approach to Language"—Teachers Oakland Oral Day School for the Deaf, Oakland, California

HEALTH AND PHYSICAL EDUCATION

Allen Hayek, Section Leader, Oregon School for the Deaf, Salem, Oregon, Presiding

1:45–2:15—"Six-man Football for Small Schools and for Intramural Programs in Large Schools"—Dr. Stephen Epler

2:15–2:30—Discussion

2:40–3:30—"Fundamentals of Line Play"—Elliott Igleheart, Oregon School for the Deaf, Salem, Oregon

3:30–3:50—Discussion

ART SECTION

Mrs. Grace Bilger, Section Leader, Kansas School for the Deaf, Olathe, Kansas, Presiding

Mrs. Esther Deer, Co-chairman, Washington State School for the Deaf, Vancouver, Washington

1:45–3:50—Visual Aids in Art

Appreciation and Art Techniques

Art Exhibits from Various Schools Will Be on Display. New Books and Art Materials Will Be Exhibited

4:00–6:00—Conference of Executives of American Schools for the Deaf, Howard M. Quigley, Superintendent, Minnesota School for the Deaf, Faribault, Minnesota, Presiding

EVENING PROGRAM

8:00—Entertainment

TUESDAY, JUNE 30, 1953

READING

Mrs. Elizabeth Gesner, Section Leader, Mary E. Bennett Day School, Los Angeles, California

Mrs. Evelyn Stahlem, Principal, Mary E. Bennett Day School, Los Angeles, California, Presiding

8:45–9:05—Paper: "Possibilities for Parent Participation in a Reading Program," Elizabeth Gesner, Mary E. Bennett School, Los Angeles, Calif.

9:05–9:30—Demonstration

9:30–9:40—Question Period

9:40–10:00—Paper: Mrs. Irene Wasell, Mary E. Bennett Day School, Los Angeles, California

10:00–10:20—Paper: "Appraisals of Reading Achievement at the Secondary Level"—Mrs. Nell Driggs Reed, Foshay Junior High School, Los Angeles, California

10:20–10:45—Demonstration

10:45–10:55—Question Period: Herschel Ward, Moderator

11:05–11:45—Address: Dr. Romaine Mackie, Office of Education, Federal Security Agency, Washington, D. C.

SECTION FOR VOCATIONAL TEACHERS

Dr. Carl E. Rankin, Section Leader, Superintendent, North Carolina School for the Deaf, Morganton, North Carolina, Presiding

8:45–8:55—Opening of Meeting

1. Introduction of the Panel
2. Explanation of Procedures
3. Other Announcements

8:55–9:20—Presentation of Papers

"The Program of Vocational Instruction in a School for the Deaf"—Uriel C. Jones, Principal, Vocational Department, Tennessee School for the Deaf, Knoxville, Tennessee

9:20–9:30—Discussion

9:30–9:55—"The Guidance Program in a School for the Deaf"—Boyce Williams, Institute for Special Workers for Aural Disabled, Office of Vocational Rehabilitation, Federal Security Agency, Washington, D. C.

9:55–10:05—Discussion

10:05–10:30—"The Placement Program in the School for the Deaf"—Richard M. Phillips, Dean of Students, Gallaudet College, Washington, D. C.

10:30–10:45—Discussion

1:15—Convention Photograph

1:30—Conference Photograph

RESEARCH

Dr. Helmer R. Myklebust, Professor of Audiology, Northwestern University, Evanston, Illinois, Presiding

1:45–2:10—"A Study of Memory Capacities of Deaf Children"—Lloyd Graunke, Assistant Superintendent, Illinois School for the Deaf

2:10–2:35—"The Use of Achievement Tests"—Marshall Hester, Superintendent, New Mexico School for the Deaf

2:35–3:00—"Research in Schools for the Deaf"—Dr. Irving S. Fusfeld, in Charge of Research, Gallaudet College, Washington 2, D. C.

3:00–3:25—"Research on the Use of Hearing Aids"—Dr. Clarence D. O'Connor, Superintendent, Lexington School for the Deaf, New York, New York.

3:25–3:50—"The Effect of Deafness on Behavior and Adjustment"—Dr. Helmer R. Myklebust, Professor of Audiology, Northwestern University

3:00–5:00—Tea

SUPERVISING TEACHERS AND PRINCIPALS

Lloyd A. Ambrosen, Section Leader, Principal, Minnesota School for the Deaf, Faribault, Minnesota, Presiding

4:00–6:00—"A Reading Program for Primary and Intermediate Grades"—Mrs. Edna L. Wolf, Supervising Teacher, Primary Department, California School for the Deaf, Berkeley, California

Discussant: Miss Priscilla Pittenger, Department of Special Education, San Francisco State College, San Francisco, California

"Evaluating Pupil Learning"—Armin G. Turechek, Principal, California School for the Deaf, Riverside, California

Discussants: E. LeRoy Noble, Principal, Iowa School for the Deaf, Council Bluffs, Iowa; Lewis M. Mayers, Principal, Oregon School for the Deaf, Salem, Oregon

"A Realistic Program for the Slow Learning Deaf Child, Ages 14–19"—Hugo F. Schunhoff, Chairman, Department of Education, Gallaudet College; Principal, The Kendall School for the Deaf, Washington, D. C.

Discussant: Lloyd Graunke, Assistant Superintendent, Illinois School for the Deaf, Jacksonville, Illinois

(To be continued Thursday, 4:00 p.m.)

EVENING PROGRAM

Dr. Daniel T. Cloud, President, Presiding

7:45–8:05—Gallaudet College Reports: Dr. Leonard M. Elstad, President, Gallaudet College, Washington, D. C.

8:05–8:25—Greetings: Dr. Clarence D. O'Connor, President, Volta Speech Association for the Deaf, Washington, D. C.

8:25–8:55—Address

8:55—Announcements

WEDNESDAY, JULY 1, 1953

SIGHTSEEING TRIP

Wednesday, July 1, will be devoted entirely to a sightseeing trip. Supt. Epperson has arranged for busses to take all visitors on a 190 mile trip up the scenic Columbia River. Visits will be made to Bonneville Dam, the apple country and many other beautiful spots along the picturesque Columbia River valley.

Busses will leave the school grounds between 9:30 and 10:00 o'clock and will return after supper the same day.

THURSDAY, JULY 2, 1953

AUDITORY TRAINING

Lloyd Graunke, Section Leader, Assistant Superintendent, Illinois School for the Deaf, Jacksonville, Illinois, Presiding

8:45–9:05—Introduction: Auditory Training—Method or Notion?—W. Lloyd Graunke, Section Chairman

9:05–9:35—Demonstration: The Use of Recorded Songs, Stories and Rhythms in Auditory Training—Mrs. Margaret Thoreson, Teacher, and Fourth Year Pupils from Washington State School for the Deaf, Vancouver, Washington

9:35–9:55—Talk: "The Evolution of Hearing Aids"—Arne T. Darbo, Special Representative, The Maico Company

9:55–10:20—Discussion: Relations between Schools and the Hearing Aid Industry

Discussants: Howard M. Quigley, Superintendent, Minnesota School for the Deaf, Faribault, Minnesota; J. Harold Stark, Supervising Teacher, Illinois School for the Deaf, Jacksonville, Illinois; Edward W. Reay, Principal Washington State School for the Deaf, Vancouver, Washington; Arne T. Darbo, Maico Company.

10:20–10:50—Demonstration: The Chromovox

(Demonstrator to be selected)

SOCIAL STUDIES

Herschel R. Ward, Section Leader, Principal, Tennessee School for the Deaf, Knoxville, Tennessee, Presiding

8:45–9:00—Presentation of Problem No. 1

9:00–9:25—Demonstration: "Social Studies at the Intermediate Level"—Miss Betty Phillips, Oregon School for the Deaf, Salem, Oregon

9:25–9:45—Panel Discussion: Mrs. Margaret Thoreson, Washington State School for the Deaf, Vancouver, Washington; Miss Alice M. Holt, Irving School, Spokane, Washington; Mrs. Hattie Harrell, Maxon School for the Deaf, Portland, Oregon; Miss Betty Phillips, Oregon School for the Deaf, Salem, Oregon

9:50–10:05—Presentation of Problem No. 2

10:05–10:30—Demonstration: "Social Studies, Upper Level"—Mrs. Margaret Sinclair, Washington State School for the Deaf, Vancouver, Washington

10:30–10:50—Panel Discussion: James Hoxie, Oregon School for the Deaf, Salem, Oregon; Paul C. Byrd, West Virginia School for the Deaf, Romney, West Virginia; Emil Ladner, California School for the Deaf, Berkeley, California; Mrs. Margaret Sinclair, Washington State School for the Deaf, Vancouver, Washington

PUBLICATIONS AND PUBLIC RELATIONS

Dr. Powrie V. Doctor, Section Leader, Editor, *American Annals of the Deaf*, Gallaudet College, Washington, D. C., Presiding

8:45–8:55—Opening Remarks

Each of the following members of the panel has been asked to present three problems or points in the education of the deaf which he or she believes to have been more frequently misunderstood by the general public than any other in the field of deafness. Bearing in mind the theme of the Convention, "Toward a New Understanding of the Deaf Child," each participant has been asked to present three problems from the point of view of

8:55–9:10—"Parents"—Mrs. Harriett Montague, Director Correspondence Course, John Tracy Clinic, Los Angeles, California

9:10–9:25—"The Classroom Teacher"—Mrs. Laura Crosby, Wisconsin School for the Deaf, Delavan, Wisconsin

9:25–9:40—"The School Administrator"—Roy Moore Stelle, Superintendent, Texas School for the Deaf, Austin, Texas

9:45–10:05—"Of Higher Education"—Dr. Leonard M. Elstad, President, Gallaudet College, Washington, D. C.

10:05–10:20—"The Adult Deaf"—James N. Orman, Supervisor, Manual Department, Illinois School for the Deaf, Jacksonville, Illinois

10:20–10:35—"Rehabilitation for the Deaf"—Boyce R. Williams, Consultant, Deaf and Hard of Hearing, Federal Security Agency, Washington, D. C.

10:35–10:50—"Research"—Dr. Helmer R. Myklebust, School of Speech, Northwestern University, Evanston, Illinois.

11:05–11:45—Address: John Taylor, Director of Speech and Hearing Program, State of Oregon

Visual Education

Miss June E. Newkirk, Section Leader, Arizona School for the Deaf, Tucson, Arizona

1:45–2:10—Demonstration and Paper: "The 'Direct Method' in the Primary Grades"—Mrs. Wilma Baker, Oregon School for the Deaf, Salem, Oregon; Mrs. Mary Nelson, Oregon School for the Deaf, Salem, Oregon

2:10–2:35—Effective Use of the Blackboard and the Bulletin Board in the Classroom:

1. "In the Lower Grades"—Mrs. Lapreal Wright, Idaho School for the Deaf, Gooding, Idaho

2. "In the Upper Grades"—Miss Bettina Hoult, Iowa School for the Deaf, Council Bluffs, Iowa; Mrs. Lillian Sheiry, Iowa School for the Deaf, Council Bluffs, Iowa.

2:35–2:55—Paper: "Essentials of a Good Field Trip"—Ralph Hoag, Arizona School for the Deaf, Tucson, Arizona

2:55–3:20—Paper and Demonstration: "Comparative Study of the Educational Value of Four Types of Projectors"—Myron A. Leenhouts, Principal, California School for the Deaf, Berkeley, California

3:20–3:50—Paper and Demonstration: "Captioned Sound Films"—Dr. Edmund B. Boatner, American School for the Deaf, West Hartford, Connecticut

PRESCHOOL AND KINDERGARTEN

Miss Marguerite Stoner, Section Leader, John Tracy Clinic, Los Angeles, California, Presiding

Panel Discussants: Miss Marguerite Stoner, John Tracy Clinic, Los Angeles, California; Miss Helen Woodward, Central Institute, St. Louis, Missouri; Mrs. John E. Keene, Preschool Hearing Center (Parent)

1:45–1:50—Opening Remarks

1:50–2:20—Demonstrations:

Miss Nancy Hayward, Teacher, Vancouver School for the Deaf and Blind, Vancouver, B. C.

Children—One (three year old). Two or three (five year olds).

2:25–2:55—(Name of second teacher to be designated)

3:00–3:50—Panel Discussion: "Various Plans for Preschool Education—Pro and Con

1. A residential school.
2. A day school organized by parents.
3. (A parent-centered organization will be presented.)

SUPERVISING TEACHERS AND PRINCIPALS

Lloyd A. Ambrosen, Section Leader, Principal, Minnesota School for the Deaf, Faribault, Minnesota, Presiding

(Program continued from Tuesday)

4:00–6:00—"A Reading Program for Primary and Intermediate Grades" —Mrs. Edna L. Wolf, Supervising Teacher, Primary Department, California School for the Deaf, Berkeley, California

Discussant: Miss Priscilla Pittenger, Department of Special Education, San Francisco State College, San Francisco, California

"Evaluating Pupil Learning"—Armin G. Turechek, Principal, California School for the Deaf, Riverside, California

Discussants: E. LeRoy Noble, Principal, Iowa School for the Deaf, Council Bluffs, Iowa; Lewis M. Mayers, Principal, Oregon School for the Deaf, Salem, Oregon

"A Realistic Program for the Slow Learning Deaf Child, Ages 14–19" —Hugo F. Schunhoff, Chairman, Department of Education, Gallaudet College; Principal, The Kendall School for the Deaf, Washington, D. C.

Discussant: Lloyd Graunke, Assistant Superintendent, Illinois School for the Deaf, Jacksonville, Illinois

GENERAL SESSION

Dr. Daniel T. Cloud, President, Presiding

8:00–8:45—Speaker to be designated

8:45—Business Meeting

FRIDAY, JULY 3, 1953

GENERAL MEETING

Kaffeeklatsch

Suggestions for Next Convention

Adjournment

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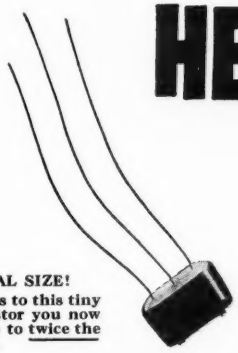

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Conceptual Thinking of the Deaf*

PIERRE OLÉRON

Laboratoire de Psychologie de l'Institution Nationale des Sourds-Muets, Paris, France

STUDIES by psychologists (7), as well as observations by educators (1), indicate that deaf people are inferior to those with normal hearing, particularly in the domain of abstract mental activities.† It is therefore natural to be especially interested in this domain.

Among these mental activities, conceptual thinking seems to deserve study first of all. On the one hand, speaking in terms of the study of logic, concepts are basic to such mental operations as judgment and reasoning; and on the other hand, they depend for their formation on other operations such as abstraction.

From an experimental point of view, a concept is essentially a principle of classification, this classification being an operation by which objects are grouped according to a certain likeness. This is an *abstract* principle; that is to say, it is detached from observed data or imposed on these data. Conceptual thinking can therefore be studied experimentally with the aid of classification tests, provided these classifications have two characteristics:

a) The category must be chosen from among other possible ones.

b) The subject must be able to use successively the various possible categories.

(If these two conditions are lacking, the classification could be made merely on the basis of perception or of interest.)

Such tests are classic: the Weigl form-color test, the sorting tests of Goldstein and of Halstead, the Wisconsin card sorting test.

Three experimenters have applied tests of this kind to deaf subjects.

* An adaptation of a paper presented to the Thirteenth International Congress of Psychology at Stockholm, Sweden, July 19, 1951.

† The deaf subjects considered here are subjects affected with a severe hearing loss, dating from birth or early childhood, who consequently could not have learned to speak in the normal way.

1) Höfler (4) gave the Weigl sorting test to deaf children of school age. Among other behavior characteristics of these subjects, he noted, even in the oldest and most intelligent, attachment to a single aspect, use, or color. Out of 30 subjects, only 4 shifted spontaneously from one sorting to another.

2) MacAndrew (6) used as materials 25 objects differing in form and substance (5 forms: squares, circles, triangles, rectangles, semicircles; 5 substances: cork, cardboard, leather, plain glass, frosted glass). His deaf subjects, selected as to intelligence, had an average age of 11 years, 11 months. The test consisted of executing successively the two possible kinds of sorting. For this, the experimenter used three degrees of "social pressure." In 10 trials only 4 children out of 24 succeeded, in spite of a preliminary exercise on 10 objects sorted according to form and color.

3) Oléron (8) used as materials 27 cards which could be sorted according to the object represented, the color, or the number of these objects, as well as several series of blocks used for preliminary training. The subjects, having an average age of 15 years, 7 months, were also selected as to intelligence. The test formed a progressive series. When the subject did not change his sorting category, the experimenter pointed out his error and made him try again. In case of a second failure the experimenter helped the subject by beginning to sort according to the new category. Out of 24 subjects, only 6 succeeded in sorting without error according to the three possible categories; the proportion of hearing subjects of the same age and mental level being 15 out of 24.

The agreement of the results of these three experiments is noteworthy and clearly indicates that the deaf experience difficulty in the realm of conceptual thinking.

How can this fact be explained?

The difficulty of shifting has been described by Goldstein (2) and forms a part of what he calls the "concrete attitude." This concrete attitude is to be defined as the attitude of subjects who perceive objects as things with individual differences and not as representatives of a category or class. One might be led to apply Goldstein's theory to

the deaf. This theory has been established in the study of aphasics who, like the deaf, present anomalies in the use of language.

As a matter of fact, one does observe behavior in deaf subjects similar to the behavior described by Goldstein or by his students, as follows (8):

a) pluralist sorting: the subject takes into account simultaneously several aspects (for example size and shape);

b) concern for spatial arrangement (alignments, creation of equal series, etc.)

c) quest for "difference" achieved by arranging the objects in alternating order (for instance, big, little, medium sized, instead of grouping all the big pieces or all the little ones).

However, Goldstein's view could not be accepted unless no differences existed between "concrete" behavior and the behavior of the deaf subjects. However, differences exist, as listed below:

a) deaf subjects can benefit from the experimenter's help; they understand easily when the experimenter begins to perform the correct sorting and they continue this;

b) in the color sorting test, deaf subjects do not in the least manifest the concrete behavior described by Goldstein. Heider and Heider (3) have shown that deaf children sort color exactly like normal children.

c) the behavior described above, which one might be led to call "concrete" is manifested by normal as well as by deaf subjects. Höfler (5) had observed that the behavior of the deaf approximates that of normal young children (they associate objects which they have experienced) but only seldom resembles that of the aphasic (grouping of objects by pairs; for example, nail-hammer, etc.);

d) finally the deaf subjects do not present the glaring anomalies discussed by Goldstein under the heading of the "concrete attitude," (for example in the block design test).

Goldstein's view, therefore, cannot be applied to the deaf without modification. The characteristic common to the aphasics and the deaf is the difficulty of shifting, but this must be due to causes other than the "concrete attitude."

MacAndrew (6) has advanced another hypothesis. He

believes that the difficulty of shifting experienced by deaf subjects is due to the rigidity of their mental structure. This rigidity would be the result of their isolation from their environment and would also be found, but to a lesser degree, in the blind. In fact it is striking to note how deaf subjects persevere in the same mode of sorting and begin it again even though the experimenter asks them to change it.

MacAndrew's hypothesis is noteworthy, but what prevents one from accepting it is the very great ease manifested by deaf subjects in accepting suggestions or help (cf. above) which is not compatible with the idea of rigidity. Besides, the mental processes suggested by MacAndrew to explain this rigidity are hypothetical.

A more satisfactory and more comprehensive explanation can be found. When a subject sorts objects, he first must see if they are green or red, big or little. Next, he must group these objects by taking into account a common characteristic such as color, size, or shape. In other words, two sorts of conditions are necessary: 1) perceptive conditions (the perceptible qualities of the objects must be recognized); 2) conceptual conditions (the objects must be grouped according to their belonging to a common class).

A sorting test, such as those considered here, cannot be correctly and easily carried out unless the first, or perceptive, conditions are subordinated to the second, or conceptual, ones. In this case the perceived characteristics (green, red, etc.) serve as clues or index; but the grouping is made according to the concept (color). However, this subordination may be imperfect or lacking, as happens when the subject lends too much importance to the observed data and tends to consider them as independent entities. At this point, it becomes difficult for him to perform the test correctly, because he becomes lost in irrelevant details and does not take into exclusive consideration the common class.

Thus a whole series of levels can be set up. On the highest level, the conceptual level, one finds perfect subordination of observed elements to the concept. On the successively lower levels, the observed elements tend more and more toward independence.

According to this interpretation, deaf subjects differ from hearing subjects in that they have a tendency to give too

much importance to the observed elements. They find it difficult to subordinate these elements to concepts, but tend rather to regard them as independent entities. Thus they are usually found to be on an infra-conceptual level.

The above interpretation is confirmed by the examination of their verbal behavior. In one of the experiments mentioned (8), the subjects were asked, once the task was finished, to state the reasons for their sorting (questions and answers were in written form). The descriptive attitude predominates in the answers, which seldom attain a level of logical thinking, i.e., a level in which the reasons for the action are given. Some of the subjects can only describe the objects, or the action that they or the experimenter have made. Others express the principle of classification in concrete terms (for example: the color blue, not color in general). The best answers point out the similarity of the objects grouped together which still is an observed datum. The idea of a common class is hardly ever expressed in abstract form (out of 24 subjects, only 2 spoke of "number").

How does the view outlined above explain the difficulty of shifting? In order to sort the objects successively in different ways, the subject must distinguish the various sorting categories one from the other. For example, he must distinguish color from shape and number. But the objects seen are wholes in which the various aspects are fused together and do not appear as separate aspects. One sees, for example, three green trees; one does not apprehend the number, then the color, then the object. Thus, when the subject remains on a level in which perception dominates, he perceives objects as wholes. He sees the various aspects simultaneously present, but he is not able to use them successively in distinct classifications. The result is the repetition of the same kind of sorting and the apparent rigidity of behavior.

Therefore, the mental processes of the deaf are characterized by an especial concern for observed data, which data guide them in accomplishing the tasks set before them. This attitude becomes an obstacle when they are confronted with tests demanding a certain level of abstract thinking.

Unlike Goldstein's "concrete attitude," this does not

constitute an abnormal state. Rather it indicates a stage of incomplete development, similar to an earlier stage found in normal children. It can also be called a lack of balance in which the observed aspects outweigh the conceptual ones. However, the balance can be restored and deaf subjects can attain the conceptual level. This is, however, more difficult for them than for normal subjects.

It is legitimate to believe that education exerts a favorable influence here. Höfler (5), for example, found that the Weigl sorting test was executed better by those subjects who possessed a better use of oral language. It must be that a knowledge of abstract terms, and especially an ability to use them, facilitate the execution of these tasks. A certain correlation exists (with, however, some exceptions) between the degree of success in sorting and the ability to relate verbally the reasons for the action. Language permits a more complete domination of concepts over observed elements.

In summary, the behavior of the deaf in sorting tests presents the following characteristics:

—difficulty in shifting from one sorting principle to another;

—repetition of one type of sorting already used, thus giving the impression of rigidity;

—difficulty in explaining the sorting principle adopted.

Neither Goldstein's theory on the concrete attitude nor MacAndrews' on rigidity due to isolation seems to provide a satisfactory explanation.

The view proposed in this paper holds that the difficulties of the deaf come from their attachment to observed data and from the nonsubordination of these data to abstract conceptual conditions. This is the mark of a retarded development rather than of a real incapacity. Progress in the use of language and of abstract terms should contribute to the development of conceptual thinking.

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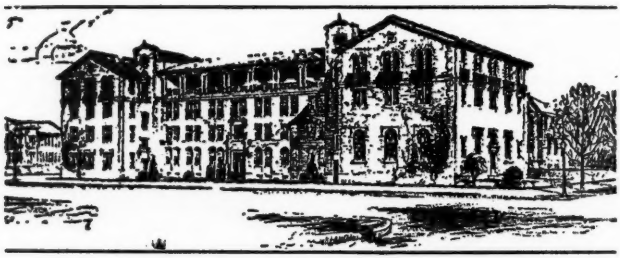

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Creative Art and the Deaf Child

PHYLLIS KITINOJA, A.B.

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I. INTRODUCTION

We know that when the deaf child enters school, he does not have speech to express himself. Through sight and touch he begins to build his language. However, it takes many years for his language expression to build up the vocabulary used by hearing children when they enter school. There is, however, another avenue of expression in which the deaf child grows at the same rate as the hearing child, and that is in his expression through art.

What can educators of the deaf do to stimulate a maximum growth in art expression? For acceptance of the child's drawing to be more than mere sentiment, we need an understanding of the steps involved in this growth. We need to know what the deaf child draws in a rather permissive environment. The first grouping will concern children between the ages of two and six. The second grouping concerns children between the ages of seven and nine. (The first grouping is not broken down further because of the disparity in age at which the deaf child first enters school.)

Once this understanding has been established, we shall discuss techniques that the classroom teacher can use to stimulate a creative growth in art expression where the child expresses his own feelings and emotions.

II. THE DEAF CHILD FROM TWO TO SIX

Random Scribbling. At first the child simply becomes acquainted with the medium. He enjoys feeling the paper and scratching the crayon, and may even try tasting them. He makes his marks on the paper with no conscious control. His whole arm moves as he draws without differentiation. He may draw first with one hand and then shift to the other hand.

Controlled Lines. The child gains increasing control so that he begins to move the crayon back and forth, up and down. This conscious control develops further as his eye-hand movements become better coordinated, and he will

draw crosses, squares, triangles, and rectangles. What delight he feels in this mastery!

Circular Lines. As his control increases, he begins consciously to draw circular lines. When the deaf child has been exposed to a good deal of printed board work and charts, he often tries to form letters of the alphabet at this stage although he can see no figures or no space in his drawings. Some children's drawings indicate, however, that they may be drawing a very conscious design.

Combinations. The child combines the lines and the circles. A circle for the head and two lines becomes a man. He can name objects within his drawing. For instance, he says, "Train," and another time, "Tree." Somewhat later he goes into more detail in his explanation. He says that the fish is swimming. About another drawing he says, "The fish is in the house. Smoke comes from the chimney. It's cold."

Long before the adult can perceive these objects, the child sees them and names them. So we cannot say his drawings lack figures, design, or even space, for the child sees them all and can tell about them.

However, these stages are not always so clear-cut as the preceding discussion might indicate. Rather they merge into one another. Robert who draws a Christmas tree may on his second drawing revert to scribbling back and forth.

Increasingly the child learns to use hand movements and somewhat later, finger movements to replace whole arm movements. When conscious control is secured, he usually uses one hand consistently.

At none of these early stages did the choice of three or four, or even six, basic colors distract the child. He tended to use one color throughout a picture so that his movements were never disrupted by frequent stops to change the choice of color. Personality differences seemed to pervade in the choice of color, as well as whether the child drew with light or determined strokes.

III. The Deaf Child from Seven to Nine

A word of caution before we proceed. The age limits which we have set in this early art growth are by no means to be taken literally for each individual child. In fact,

when the child has entered school at four years of age and has been exposed to art work, he will probably start the development described on the following pages at six years of age.

At this stage the child has achieved form which is readily recognized. However, at times he may go back and practice the scribbling of an earlier stage. We adults see his figures and his design. There is space. He draws his figures on the ground. The house and trees are placed on this base. The sun and, a little later, clouds are seen in the sky.

Color

As children grow in their art expression, we see the increasing use of realistic representation in their choice of color. In the early stages of the achievement of form, the child uses a gamut of colors to represent an object. For instance, we have seen the sun colored yellow, green, orange, red, and black. People have been outlined in red, brown, orange, black, green, purple, and combinations of colors such as red and brown. The rain has been represented as black dots, short orange lines, and long green lines.

In a single drawing the child may use only red and orange, colors which to our adult senses are antagonistic.

At times the child's use of color seems to us to be very imaginative. For instance, Philip, a seven year old, used black to show the rain and the sun and his house on a rainy day. His picture looked quite as dark and dreary as that particular day. Charles, an eight year old, became very excited on the first day that it snowed. He drew white figures on manila paper to depict his snow scene.

Proportion and Such

In the adult sense the child's drawings may lack proportion. The wagon may be drawn larger than the boy. We know how very differently from the adult this child must be perceiving the wagon. It might be mentioned here that children seem to understand one another's drawings and to make no comment on seeming lack of proportion.

Lee painted the face of a boy having two eyes, a nose, two ears, but no mouth! When we hung this picture on the wall he directed the other children to look at his drawing. They smiled and told him it was nice. Not one of them asked why he didn't draw the mouth.

For this is the way children draw. Art is their expression and they draw only that which is important to them in the process of drawing. Faces sometimes lack eyebrows; arms may lack hands and fingers. George drew a picture of a boy holding an umbrella in the rain. Only one arm with the hand was drawn, for the arm not holding the umbrella was unimportant.

At other times, however, the face may be so detailed as to show eyebrows, eye lashes, and lines in the face. A Christmas tree may have bulbs, lights, and even tinsel.

Sprees

At times a child will spend days drawing a series of airplanes, and we wonder whether he will ever pass on to another expression. Sometimes he varies the color combinations, and at other times he varies only the size and quality of paper used. This repetition may start out with one child and then involve a group of four or five. In time it passes. It seems to be quite a natural aspect of this particular growth period.

Imitation

A child does not remain constantly at one stage of expression, nor does he move steadily toward new and more advanced forms of art expression. Even the most original child may revert at times to an earlier stage of scribbling.

At times a child of his own will may choose to copy the drawings of another child. When no particular issue is made of this imitation, the child soon seeks self-expression.

Only when such imitation continues month after month as is illustrated in the following description does it indicate a deeper psychological problem.

Miss Kay, a classroom teacher, observed that Carl, a nine year old, never elected to draw a picture unless most of the other children were drawing. For a period of four months she noticed that he never did an original drawing. He imitated one child and then another. She made no mention of this imitation to him for on the basis of his art expression and hopelessly aggressive bid for attention, she realized his was an emotional problem which could not be erased by scolding. Carl's underlying emotional problems found release in play therapy sessions. After twelve weeks of such therapy, Carl began, little by little, to seek his own means of artistic expression in drawing.

IV. Philosophy and Techniques

Before discussing the techniques which will stimulate creative expression in art, it seems necessary to state our own basic philosophy of art.

Art is an extremely important means of expression for the deaf child. Through his art work he can tell you of his experiences when he lacks the language to explain.

Over the week-end Billy injured his eye so that when he returned to school, he had a red mark about the size of a pea on his eyeball. At once he drew a picture of a person, and surely enough, he pointed out the red mark—the very same as his own.

At times art is an outlet for his emotional feelings where he expresses his hostility, anger, doubt, fears. We certainly should not look for every drawing to reflect strong emotional feelings, for so many are representations of his expanding conception of his environment. Interpretation of drawings is so individualistic, depending upon a knowledge of that particular child—his home, his family and friends, his personality—that we shall not delve deeper into this problem in this paper.

There is no reason for the teacher ever to give the child coloring books to fill in. For they restrict the child, and he does not learn to rely upon his own imagination and initiative to express himself.

It was the art period before Halloween. The art teacher painted three samples of a large black cat. The cat's eyes were green and its whiskers were yellow. The rest of the paper was painted orange. One cat sat; one stood; and the third was sleeping.

Chuck interrupted, "Look outside. It's snowing. I want to draw the snow." (It was the first day it had snowed during that school year.)

"No," answered the art teacher. "We're not bothering with the snow today. This week is Halloween so we are going to paint cats."

Chuck still was not ready to copy the cats. He drew a haunted house with ghosts peering out of the windows and then started to draw a purple witch riding on a broomstick.

"Witches are black," said the teacher, handing a black crayon to Chuck.

The preceding description of an art class we observed illustrates the negative aspects of certain art instruction.

Thus art instructors make the child uncertain and overcautious by the following means:

1. Giving samples to copy.
2. Restricting the child's choice of color.
3. Restricting the child's choice of topic.
4. Stopping the child's exploratory and individual means of expression.

Particularly at these early stages art should be enjoyed for its own sake, for experiences in these beginning years influence so greatly later attitudes. The act of drawing is infinitely more important than the end product. We must not ask questions like, "Where are his arms?" or "Aren't you going to color the sky?" or "The chimney does not look like that, does it?" We cannot expect the child to draw realistically any more than we expect the babbling child to pronounce words correctly.

At *all* times the child should be free to draw or not to draw as he pleases. How is this permissive feeling accomplished? Sheets of drawing paper are not handed to the child. Rather they are kept in a pile on the table so that he can pick out as many or as few sheets as he desires. It might be noted that scribblers use more sheets of paper in drawing than children who draw figures and design. As children gain control, they restrict their own intake. Certainly at no time should the child be made to color the whole page, or to color both sides of the paper.

He further gets the feeling of this permissiveness by having alternative play activities available. The child should be free to leave his art work (even though it may not be finished) to join group play.

Crayons are the best medium during this early stage of art development. During the scribbling stage especially thick crayons are preferable to thin crayons since they are easily handled by the child and do not break so easily as thin crayons. Four to six colors are sufficient. With crayons the child is able to see distinctly the lines he is drawing. Pencil leads break and therefore are not desirable for the young child. However, if the child experiments with drawing with his lead pencil, we would not take it away from him.

Finger paints can be used rather successfully. When

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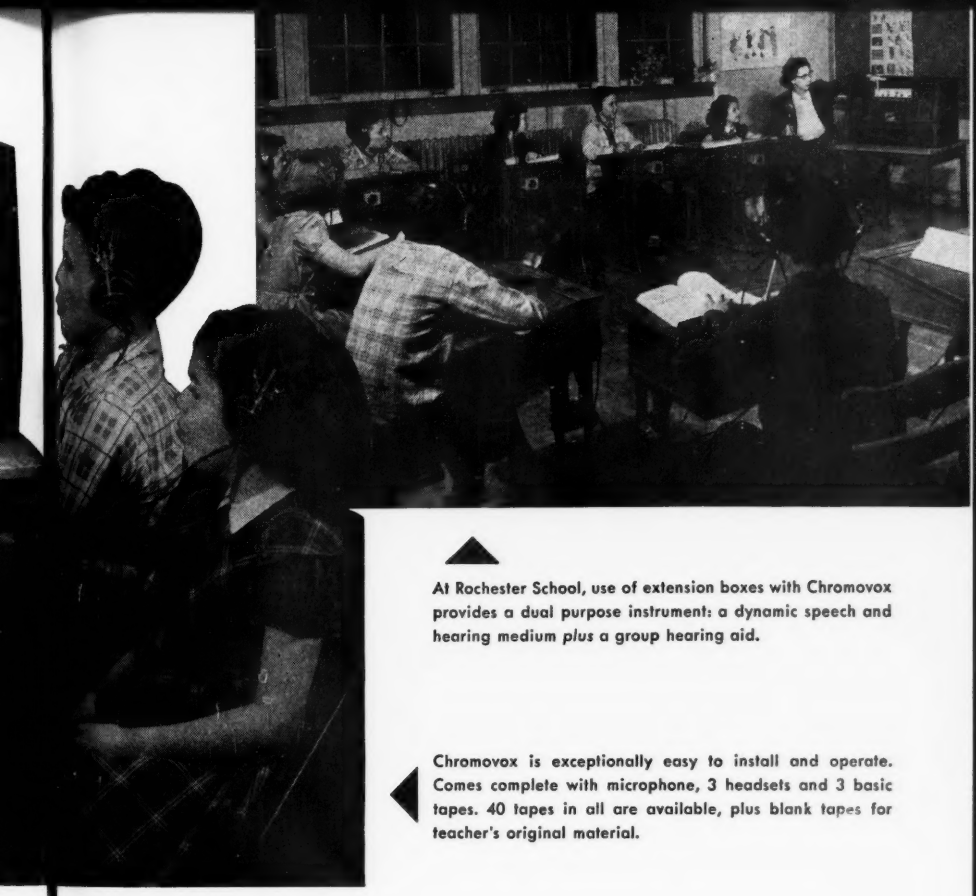

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economy is necessary, the teacher might supply oilcloth in place of the usual glossy paper. Oilcloth can be washed and used over and over again. The teacher sets the finger paints at a convenient table so that the child can choose his color, or colors, and the amount to use.

When a brush is used, the paint should be tempera or poster paint because of the texture and consistency. A stiff brush is to be preferred and the paper should be large and absorbent. Again in cases where economy is needed, the teacher might use large sheets of newspaper.

Clay or permaplast or plasticine is desirable also for they provide the child with experiences in three dimensional material. Clay work undergoes development comparable to that seen with crayons and paints. At first the child beats the clay on the table. Later, he learns to tear it apart. And still later he learns to roll it into various sizes and shapes. When he is about six years of age, he uses the clay to make figures and objects which he can name.

Water color should never be used with children at these stages. Because of its running quality, the child cannot gain control over his motions and he is unable to follow his lines.

How does the child's art expression grow during these years? It seems to us that within each child is a tremendous growth potential. The child's own development of a technique must be respected. With the urge for expression grows a perfection of his style. With all honesty we must admit that we cannot teach the child "how" to draw. For he cannot draw what he is not feeling and thinking. Who would believe that George, who is seven years old, is ready to draw a man skiing down a hill and a man holding his hands behind himself as he ice skates? Philip, another seven year old, uses lines and colors in abstract drawings which show movement and feeling. Charles, a nine year old, draws a porch and mailbox on his house. At Christmas time he paints a huge candy cane towering over his house, snow falling and gathering on the roof and window sills, and Santa's sleigh and reindeer waiting quietly outside the house.

Prizes and grades for art work encourage imitation and, therefore, are to be discouraged. The same might be said

for holding one child's drawing as an example for the others, and for selecting only one or two drawings for display. All children should have at least one drawing in the class display . . . a display which is changed frequently. Naturally patterns and other imitative expression would have no place here.

A feeling of pride grows when a child sees his creation displayed in a frame. Inexpensive frames can be made from tagboard. It is important to remember to hang the drawings at the child's eye level.

The teacher does not use this art period to prepare her lesson plans, for during the drawing process is the time that children wish to tell what they are drawing and feeling. The children should be free to explain or not to explain their drawings. The teacher should reflect back their expression with smiling enthusiasm so that each child can feel the importance of his drawing.

Up until the time that the child begins a definite form, the teacher should encourage him to draw, draw, draw. Once the form is recognized, she can provide him with experiences which will widen his concept of his environment. For instance, then is the time for field trips to the museum, downtown, hospital, fire department, and stores. They might simply take walks. Films and filmstrips bring the world outside into the classroom. Rainy days and snowy days are especially good times to go out and feel the out-of-doors.

Song of the Deaf Child

I am deaf. I cannot hear your words. But I can see and feel. Let the light fall on your face so that I may read what is there. Show me the emotions that you are feeling for I cannot understand what is cold and distant and locked up.

Give me things which I can see and touch and feel. Let me use them in my own way so that I may learn. Do not try to pass on to me all your knowledge and your prejudices. I want to experience the things in life myself.

Respect what I am and not what you want me to be. I love the simple things. Things which you may have become too sophisticated or inhibited to enjoy. I like the feel of rain upon my face when the sun wears its dark face. I like the tiny flakes of snow which come down to

kiss my fingertips. I marvel at the delicate little petals of a dandelion. I like to watch the goldfish as little bubbles break the smooth pattern of the water.

When I am drawing, do not let your words seek to guide my hands for I see the world differently from the way you do. When I was very small, I saw only a face and legs. Now I see more, but my drawing will lose its meaning when I must put in each feature that you are seeing through your adult perspective. For I can draw only that which is important to me. At times even I cannot explain their meaning so do not probe me with your questions. I shall tell you what I want you to know.

Be patient with me for I cannot possibly learn quickly all the things you see and can hear. I want to learn and I want to please you, but some days I am tired or I am feeling low, so that I do not grasp all the things you are trying to teach me. So remember them all and tell them to me again.

When my feelings have been hurt, love me. There are times when I cannot explain the tears which are flowing from my eyes and the aggression which I exhibit, but love me and comfort me with your warm expression of feeling and it will all pass and be forgotten.

For I am growing up and soon must be ready to take my place in an adult world. So let me live my childhood while I may.

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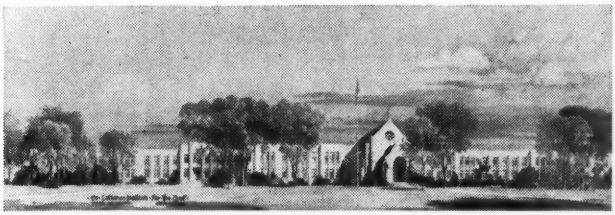

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The Performance of Deaf Trainee Laboratory Mechanics on Aptitude Tests*

SAMUEL KAVRUCK

Test Development Section, United States Civil Service Commission, Washington, D. C.

Problem: It is estimated that there are many thousands of persons under 35 years of age in the United States with hearing impairment which seriously affects their welfare, educationally and vocationally. The needs of our national defense necessitate a careful study of this and other physically handicapped groups in order that, through vocational rehabilitation, the services of a maximum number of employables may be made available to the nation.

In the placement of this and other physically handicapped groups, the Civil Service Commission is required to place such persons on an equal basis of competition with other applicants. They cannot, however, be provided with any test material which would give them an advantage over the non-handicapped. In addition, the tests must be practically related to the duties of the position to be filled. The task is to develop tests which are comparable in difficulty and practicality so that both the normal and handicapped applicants are placed in true competition for the jobs to be filled. Examples of such devices include the use of dictating machines in place of written material for use with the blind, very large answer sheets for spastics, aptitude tests requiring only the sense of touch for the blind, and so forth.

In a paper published by the Office of Vocational Rehabilitation in 1950, Dr. Edna Levine of the Lexington School for the Deaf, New York, New York, reported that the usefulness of only a few aptitude tests has been evaluated for the vocational training and job placement of the deaf. Surprisingly, she states that there is no particular need for test information, and that test investigations in this area are of more research than practical worth.

An opportunity for determining the feasibility of applying certain aptitude tests for use with the deaf presented it-

* This paper was presented at the convention of the American Psychological Association in Washington, D. C., September 1, 1952.

self when the National Bureau of Standards requested assistance in selecting deaf laboratory mechanics. The Bureau had found that deaf mechanics have a high production rate, and wished to employ more of them.

Subjects: The tests were tried out on 20 trainee laboratory mechanics, including 5 deaf employed in precision assembly work at the National Bureau of Standards.

Procedure: On the basis of a job analysis, four aptitude tests were selected from the Civil Service Commission's multiple aptitude battery and administered to the group. The tests measure gross dexterity, alinement or measuring dexterity, sorting inspection, and fine-finger dexterity. Each test is non-verbal, group-administered, and machine-scorable. The tests were developed and successfully applied on the basis of job analysis techniques in previous research.

The tests were conducted by a civil service examiner; as each direction was completed, it was explained to the deaf subjects by a hearing staff member from the Office of Vocational Rehabilitation, who is skilled in the use of the manual alphabet. The subjects were ranked in order of overall job efficiency by the laboratory supervisor.

Results: The job analysis indicated the major factor to be dexterity. The entire group, both hearing and deaf, was found to be high in gross dexterity. Sixteen of the 20, including all the deaf subjects, exceeded the mean score made on the test of gross dexterity by Navy apprentices. The correlation with the criterion was .18.

In alinement dexterity 17 of the 20 subjects exceeded the average score made by mechanic learners and achieved a mean score equal to that made by Navy apprentices. On this test 3 of the 5 deaf subjects scored very high, 1 scored high, and 1 received a minimum passing score as set by the Commission's norms on this test. The correlation with the criterion was .29. Gross and alinement dexterity combined correlated .278 with the criterion.

The remaining tests did not show sufficient validity to warrant inclusion in the battery. Our test of fine-finger dexterity represents that trait to a marked degree as we found in previous studies. In this instance, though 11 of the 20 subjects including 3 out of the 5 deaf scored with a

fair or higher degree of ability, the correlation of —.14 lends support to the belief that this test is not adapted to jobs where the dexterity involved is mainly in soldering electrical connections, as in the job under study.

The job analysis also showed that a test of ability to follow oral directions should prove useful. Such a test, which is part of the selection battery for non-deaf applicants, has been adapted for use with the deaf. This test is visually self-administering. Tryouts are being arranged.

Conclusions: The small number of subjects in this study makes our conclusions tentative. By using our job analysis tests to check upon the effect of the norms secured with workers on additional jobs which appear to require these abilities, and by setting our norms in advance of any follow-up studies, we avoid chance effects of spurious standards which may accompany particular results. And by studying the effects of general norms, set in advance of a try-out, we avoid the results obtained when workers on a job tend to be all high in a particular trait since no one is kept on a job who is not high on that trait. In view of the selection factor, we are not too concerned because the correlations of these tests with the criterion are not highly positive. We expect to find essentially that persons scoring low in the test are among the poorer workers on the job. Results bear this out, both for the deaf and non-deaf subjects.

Many aptitude tests can be adapted from existing tests for use with deaf workers in merit selection, or given directly without revision by examiners skilled in the use of the manual alphabet. Such tests may be used to indicate rapidly the skills possessed by deaf or other handicapped groups; they are appropriate for use in initial selection, or for purposes of internal placement in public or private industry.

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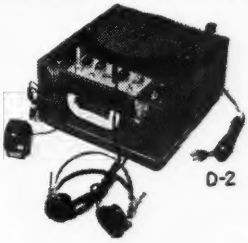

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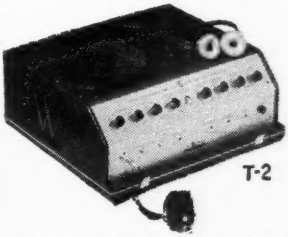

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The Verbal Element in the Intelligence Scores of Congenitally Deaf and Hard of Hearing Children*

EDWARD GLOWATSKY

Santa Fe, New Mexico

I. INTRODUCTION

THE 1950 census reports that there are approximately 20,000 deaf and hard of hearing children, aged four to twenty, inclusive, enrolled in the public and private, day and residential schools for the deaf in the United States. Realization that there are sufficient numbers of deaf children of school age to be a matter of real educational concern is not enough, however. There still remains the obligation to learn as much as possible of the intelligence, abilities, and disabilities of the deaf, as compared with hearing children, in order that the best type of educational opportunity may be made available for them.

Scanning the literature of previous investigators in this area of research, one cannot help but note that it is limited in volume. Most of the existing literature in this field deals with the comparative results between the hearing, and the deaf and hard of hearing children on various types of performance scales of intelligence. There is even a greater dearth of literature available in the area involving the verbal element in intelligence scores of the congenitally and adventitiously deaf and hard of hearing child. It seems that the investigations carried out notably by Pintner and Paterson from 1915 through 1918, on this verbal factor, have resulted in an unusual degree of finality in the conclusions that these researchers reached. So much so, it appears, that subsequent investigators have regarded their findings as precluding the worthwhileness or the necessity of pursuing further research of this factor in the field of the deaf. This study, it is hoped, will stimulate other investigators in the field of Psychology and Education, to renew with added vigor, research into the verbal factors of intelligence with the deaf.

* This paper was presented at the Rocky Mountain Convention of the American Psychological Association, University of New Mexico, Albuquerque, New Mexico, April 4, 1953.

II. The Group Studied

The present study was conducted at the New Mexico School for the Deaf in Santa Fe, and involved testing a total of twenty-four deaf and hard of hearing children now in attendance at that school. One criterion for the selection of these twenty-four children was that they be able to understand and use either the manual alphabet or the sign language. The other criterion was that these children fall within the age group for which norms have been established in the tests to be administered.

The children ranged in age from seven years five months to fifteen years seven months inclusive. Of the twenty-four children tested, twelve were boys and twelve were girls. Six of the girls, and seven of the boys, came from a bilingual background, and five of the boys, and six of the girls, came from a monoglot background. Ten children were classified as deaf, and the remaining fourteen children were classified as hard of hearing.

Pennington and Berg claim that ordinary speech occurs at a frequency of 512 cycles per second. Utilizing this claim, the hard of hearing in this study are defined as those whose sensitivity to sound at a frequency of 512 cycles per second, is reduced to thirty decibels and ranging to a maximum of sixty decibels. Those above this range were considered deaf for the purpose of this study.

The tests administered were the Grace Arthur Point Scale of Performance Tests, Form II; the Wechsler Intelligence Scale for Children, often referred to as the WISC; and the Goodenough "Draw-A-Man" Test.

It was the purpose of this study to compare the intelligence scores of the Verbal Scale of the WISC with the intelligence scores obtained on the Performance Scale of the WISC, on the Grace Arthur Scale, and on the Goodenough Test. A further study was then undertaken to note (a) whether there were any sex differences involved; (b) whether the factor of bilingualism, peculiar to this area of the nation, resulted in any significant differences in the obtained scores; and (c) whether there existed any significant differences between the deaf and the hard of hearing children on the verbal element.

III. Review of the Literature

From 1915 through 1921, Pintner, Paterson, and Reamer, in their investigations, administered the Goddard Revision of the Binet and several types of language scales, and found that the deaf children were on an average from three to five years retarded in language ability. Day, Fusfeld, and Pintner, in their nation-wide survey of schools for the deaf in 1928, tested over 4000 children attending these schools with various language scales and reported that the deaf are from four to six years behind the hearing, and achieved a maximum Educational Quotient of 65. They then state "If our educational quotient of 65 is a fair measure for the deaf children in general, we may say that the average deaf child during his school life achieves only 65% of those knowledges and skills which depend upon language, as compared with the average hearing child." When deaf children are tested by means of tests which do not require any language, these investigators estimate that their intelligence quotient lies between 80 and 90. The results of this survey seemed to conclude with authority, since it was the most extensive and ambitious survey ever made, that not only was the deaf child retarded in language ability from four to six years, but that he was also significantly retarded on tests not involving language ability, specifically, on the Pintner Non-Language Test.

Other investigators, such as Drever and Collins, MacKane, Bishop, Peterson and Williams, Kirk and Streng, Springer, Shirley and Goodenough, Zeckel and Van Der Kolk, and Birch and Birch, administering such various tests as the Pintner Non-Language Test, the Drever and Collins Performance Tests, the Grace Arthur Scale, the Goodenough Test, the Porteus Maze Test, and Kohs Block Designs, began to report findings in contrast with those of the Day, Fusfeld, and Pintner survey. The means reported by these investigators for the Grace Arthur Scale, the Porteus Maze Test, the Drever and Collins Scale, and the Pintner Non-Language Test, ranged approximately from 92 to 102. Only on the Goodenough Test were the reported means clustering around an intelligence quotient of 87 to 90.

In several instances where the investigators utilized more than one of the various performance tests, their data of quotient arrays clearly indicated that the same children were classed as mentally retarded by some tests and as superior or gifted by others. These results point out the necessity for exercising extreme caution in making a judgment of the deaf child's ability, and perhaps indicate that a battery of tests are in order here if one is to make any evaluation approaching validity. Such a battery, upon proper study, would yield a more accurate evaluation when a comparison of the various test items is made.

IV. Results, Discussion, and Interpretation

The mean intelligence quotients on the various scales administered to the entire group of children in this study were as follows: The Full Scale score on the WISC yielded a mean of 79.46; the Arthur Scale 99.67; and the Goodenough a mean of 98.46. On the Verbal scale of the WISC, a mean of 67.00 was established, and for the Performance scale of the WISC a mean of 97.33 was arrived at. Glancing for a moment at the data derived from the WISC, it is observed that the difference between the Verbal scale mean and the mean for the Full Scale is 12.46; the difference between the means for the Performance scale and Full Scale is 17.87; and that the difference between the Verbal scale and that Performance scale is 30.33; thus, it is apparent that Wechsler has given greater weight to the Verbal scale scores in determining the Full Scale I.Q. scores. As an artifact of the additional weight that Wechsler has given to the Verbal scale, this group is classed at the "borderline" level on the WISC, rather than at the "dull-normal" level as would have been the case were the Performance and Verbal scales equally weighted.

The means obtained for the Arthur scale and the Goodenough test, 99.67 and 98.46 respectively, indicate that this group very closely approximates the standardized norms for these tests. While the results of the Arthur scale are consistent with the findings of other investigators, the results of the Goodenough are incongruent with the reports of previous researchers. A possible explanation for this occurrence is that perhaps the criterion of knowledge in under-

standing and using either the manual alphabet or the sign language has introduced some selective factor in the choice of more capable subjects for the purposes of this study. An interesting fact, that this writer found in relation to the Goodenough scores, was that seven of the eleven children who obtained scores on the Goodenough lower than those on the Arthur scale, presented evidence of being more immature in their actions, poorer in their proficiency with the manual alphabet and sign language, or a combination of both. It may well be that some such similar factor was involved in the studies made by past investigators which tended to lower the means of the Goodenough test. An interesting research project possibly shedding some light on this problem would be a personality diagnosis based upon the Goodenough drawings in addition to the I.Q. scores procured from these drawings. A more accurate comparison could then be made regarding the relationship between the I.Q. scores achieved on the Goodenough and the maturity of the individual.

Comparing the means between the boys and girls, we find that the boys obtained a mean of 78.17 for the Full Scale WISC; 98.75 for the Arthur and the Goodenough; 68.75 for the Verbal scale of the WISC; and 92.67 for the Performance scale of the WISC. The girls achieved means of 80.75, 100.58, 98.17, 65.25, and 102, respectively. Using Fisher's formula to calculate the significance of a difference between the means of two small uncorrelated samples, it was found that the null hypothesis must be accepted and the difference between the means of the boys and girls must be regarded as *not* being significant. It is only the difference between the means obtained on the Performance scale of the WISC (boys 92.67, and girls 102), that faintly approaches any level of confidence (8%) regarding the differences as significant. The statement can now be made that no significant differences exist between the test scores achieved by the boys and the girls on either the verbal or performance scales administered here.

To note whether the factor of bilingualism, prevalent in this part of the country, resulted in any significant differences among the children tested, six girls of bilingual background were compared with six girls of a monoglot back-

ground; and seven boys of a bilingual environment were likewise compared with five of a non-bilingual environment.

When the difference of the means was calculated for the girls, the results disclosed that there were no significant differences on any of the scales, except for the Goodenough test. Here a level of confidence of 1.5% (a critical ratio of 3.142) was attained, indicating that there is a significant difference in the I.Q. scores in favor of the girls from a monoglot background. Searching for an explanation of why such a significant difference should exist between the two groups on the Goodenough and not on the other scales, the following observation was made. It was noted that three of the six bilingual girls were observed as being immature, or as having difficulty in the use of the manual alphabet and sign language. This factor, though not experimentally proven here, does seem to have some bearing in the determination of the results of the Goodenough test. The pertinency of this hypothesis, that a personality picture of immaturity would affect the Goodenough scores and not necessarily other performance tests, seems to be substantiated by the accumulated reports of Karen Machover. She claims that the drawing of the human figure is a highly-sensitive barometer of the individual's personality because of the personal projection in the task. Drawing upon this assumption, and transferring it to the situation involved in the Goodenough test, it can readily be seen that Machover's claim may have some bearing on the outcome of the Goodenough test.

In comparing boys of a bilingual background with those of a monoglot background, significant differences between the means of the two groups were noted for the Full Scale WISC, for the Performance scale of the WISC, and for the Arthur scale quotients. These ranged from a level of confidence of 1.8%, 1.7%, and 1.2% respectively. The level of confidence for their difference between the means of the Verbal scale of the WISC was at a 6% level, indicating that it is not statistically significant, but that it approaches the doubtful area of significance. The significance of the difference of the means between these two groups was not calculated for the Goodenough test, as a cursory glance at the two means, 98.60 for the monoglot group and 98.86 for

the bilingual group, indicates that they are almost exactly alike and would not yield any significant differences. These results are in sharp contrast with those compiled for the girls' groups, particularly those of the Goodenough test. Realizing the limits that such a small sampling place upon any trends, predictions, or conclusions to be arrived at, it can be said that the bilingual factor does produce a significant lowering effect in the I.Q. scores of the Full Scale WISC, the Performance scale of the WISC, and the Arthur scale when a group of boys of monoglot background are compared to a group of bilingual background. Furthermore, a level of confidence of 6% on the Verbal scale of the WISC between these two groups is not statistically significant, but, it falls within the doubtful area of significance. Similar studies in this area of the country may cast more light on this paradoxical situation and help to clarify the picture indicated here.

Contrasting the group of ten children classed as deaf with the fourteen children classed as hard of hearing, it was found that neither on the Verbal nor on any of the other scales administered were there any significant differences between the means. This finding concurs with the reports of previous researchers and seems to indicate that residual hearing is not a determining or affecting factor in obtained I.Q. scores when compared to a group possessing no functional hearing. A plausible explanation for this finding may be that those with functional residual hearing, are placed within the same curriculum framework as the deaf child, thus, limiting the progress such a child may achieve. It may be, however, that the cost per pupil for employing a specialized program in this area may be beyond the scope of the school budget; but, further research into this problem may prove the worthiness of such a curriculum dichotomy if substantial differences are realized.

V. Summary

A total of twenty-four deaf and hard of hearing children at the New Mexico School for the Deaf in Santa Fe were tested with three different intelligence scales. These were the Wechsler Intelligence Scale for Children, the Grace Arthur Point Performance Scale, Form II, and the Goodenough "Draw-A-Man" Test.

Of the twenty-four children, ten were classed as deaf, and the remaining fourteen as hard of hearing. There were twelve boys and twelve girls in the group. Six girls and seven boys came from a bilingual background, and six girls and five boys from a monoglot background.

The verbal element in the intelligence scores of these children was studied with respect to the following factors: (a) to note whether there were any sex differences; (b) to note whether bilingualism affected their scores; and (c) whether there were any significant differences between the deaf and the hard of hearing children.

VI. Conclusions

In so far as one can draw conclusions from twenty-four cases, the findings indicate the following:

1. In any group of deaf and hard of hearing meeting the same criteria as set forth in this study, the resulting means on the Full Scale WISC, Goodenough, Arthur, and Performance scale of the WISC will be significantly higher than the mean on the Verbal scale of the WISC.
2. In any such group there will be no significant differences between the means of the sexes for the scales used here.
3. When monoglot and bilingual girls are compared, no significant differences will be found other than that on the Goodenough test, where the monoglot group will consistently score higher than the bilingual group.
4. In the case of bilingual and monoglot boys in such a group, significant differences in the means will be obtained for the Full Scale WISC, WISC Performance and the Arthur scale. Doubtful significance will probably be indicated on the WISC Verbal scale and no differences indicated for the Goodenough scale.
5. No differences on any of these scales will be noted in the deaf and hard of hearing as a group—using the same frequency and decibel ratings to distinguish between the two groups as was used in this study.

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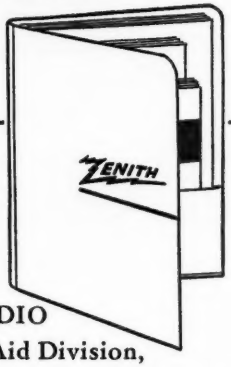

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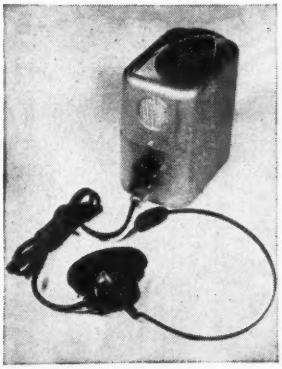

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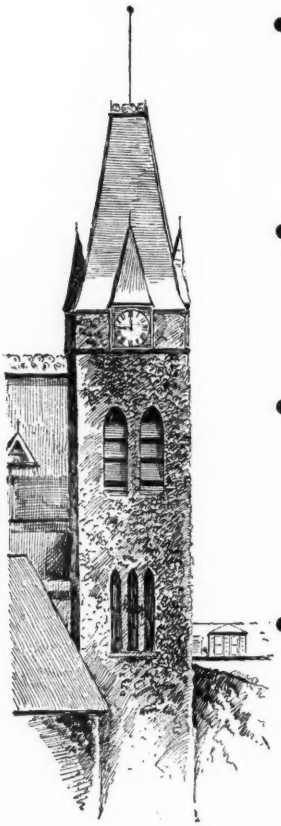

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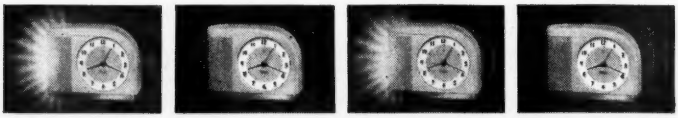

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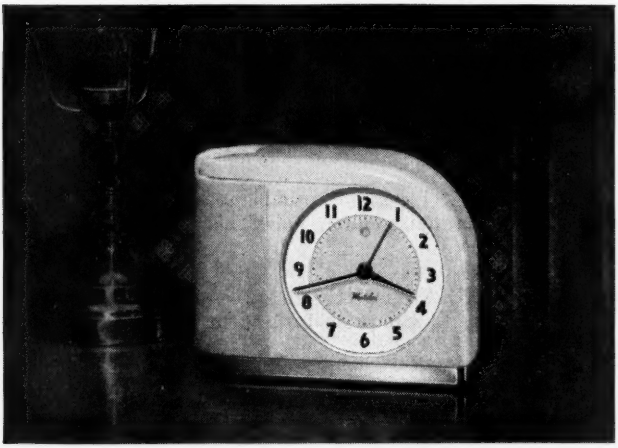

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In April, 1861, the publication ceased because of the War Between the States, inasmuch as the membership of the Convention was made up of northerners and southerners in almost equal proportion. In September, 1868, the AMERICAN ANNALS OF THE DEAF resumed publication with the editorial offices on Kendall Green, in Washington, D. C., where it has since remained.

The AMERICAN ANNALS OF THE DEAF is the official organ of the Conference of Executives of American Schools for the Deaf, which was organized in 1868, and of the Convention of American Instructors of the Deaf, founded in 1850. According to the Library of Congress it is the oldest educational publication in the United States still in existence. It is also the oldest journal on the education of the deaf in the world.

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